

Analysis of Traffic Congestion and Possible Solution for Gandhi Chowk in Miraj City

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Abstract

The traffic situation on urban roads in third-world countries such as India is a significant issue. Congestion is an issue that arises as to the number of vehicles on the road increases, resulting in more complication and danger on the city's roads. The peak hour traffic volume is determined by manually counting vehicles and multiplying by the passenger car unit (PCU). This paper investigated the root causes of traffic congestion at a Miraj intersection and suggested solutions to the issue.

Keywords: - *Environment, Economy, Miraj, Traffic congestion, Travel time.*

INTRODUCTION

Rapid urbanization has produced a slew of problems in most cities. Traffic congestion is one of the most intolerable urban issues that have arisen as a result of the rapid growth of private transportation, negatively impacting urban society and the economy. For all large and growing cities, traffic congestion is a serious problem. Congestion extends travel time, increases energy consumption, worsens congestion, and increases the risk of a

traffic accident. The aim of this paper is to provide a strategic vision, conceptual structure, logical sense, and guidance on some practical ideas for managing traffic at intersections in Miraj city in such a way that it has a lower overall effect on individuals and society. As a result, we are still looking for traffic solutions that will provide not only smooth mobility but also economic efficiency and a livable climate.

OBJECTIVES

The study's main goal is to determine the root cause of traffic congestion and to propose realistic solutions for reducing traffic congestion at intersections in Miraj city.

STUDY AREA

The study area is Gandhi Chowk, which connects two major cities, Solapur and Sangli. A satellite image of the street is shown in the figure. It also links the R.T.O. Building, a number of bank branches, a number of colleges, the main Miraj market areas, MIDC, company offices, a number of schools, the Miraj rail junction, and the Miraj bus station, among other things. The study area is the most convenient way to get to the city's major centers or the city's outskirts. In a

nutshell, this intersection is the city's "heart". See below **figure 1**.

DATA COLLECTION

This paper is based on primary and secondary data. To collect primary data, surveyors counted vehicle movements during peak hours from 9.30 a.m. to 10.30 a.m., totaling 3247 vehicles, and during non-peak hours from 2 p.m. to 3 p.m., totaling 1000 vehicles, at various meeting points in the study area to demonstrate amount of movements. Taking pictures at peak and non-peak hours to show a contrast of various situations at different times. For four days, a total of 60 people, including pedestrians, bus drivers, car owners, and retailers, were randomly asked the number of listed questions to learn about the current situation and receive potential solutions to the issue.



Figure 1: Satellite image

Table 1

Direction of flow	Average PCU (vehicle/hr)				
	Road 1 (Solapur Road)	Road 2 (Arag Road)	Road 3 (Church Road)	Road 4 (Miraj)	Road 5 (Sangli)
Vehicle turning left	122	76	155	541	570
Vehicle moving straight	576	211	435	536	374
Vehicle turning right	425	12	44	42	454

Secondary data are gathered from online journals, the R.T.O. Office, and the Bus Association Office on the number of buses that operate on city roads on a regular basis. All of the procedures are carried out in a systematic manner, beginning with data collection, processing, and analysis, and ending with the proper presentation of the data. Above **table 1** shows the average PCU.

IMPACT OF TRAFFIC CONGESTION

Road traffic jam is a major problem in most cities in India, due to a poorly planned road network and the presence of narrow areas due to encroachments for shops. Here are some of the consequences of congestion:

1. Congestion is nothing more than a waste of time. The time that would have been lost could have been better spent on more efficient tasks.
2. Decreased vehicle speeds, as well as abrupt stops and fast acceleration patterns in traffic, result in increased

fuel consumption and pollutant gas emissions.

CAUSES OF TRAFFIC CONGESTION

The term "traffic congestion" refers to a condition on a road network in which the number of vehicles using the road rises. Slow speed, long trip timing, and high vehicular queuing occur when road networks are no longer capable of accommodating the volume of movements that they are used to.

The following are the causes:

1. Number of vehicles

As compared to the capacity of roads, the number of cars in the Gandhi Chowk is relatively high, and this number is on the rise, despite a lack of adequate growth in the number of roads and traffic infrastructure.

2. Illegal and random parking

Illegal and random parking on main roads is a common practice among drivers and

riders, resulting in unexpected traffic congestion at any time.

3. Absence of traffic signals

At Gandhi Chowk, there is no traffic signal system in place.

4. Width of street

The total width of the road is 15m but the usable width for traffic use is currently

only 9m, because of encroachment by vendors/street shopkeepers.

5. Educational institutions, hospitals, and offices

A variety of hospitals, offices, a school, governmental and public buildings, and a bank are located alongside the street, all of which have a significant effect on traffic flow during peak hours.

EVIDENCE OF TRAFFIC CONGESTION

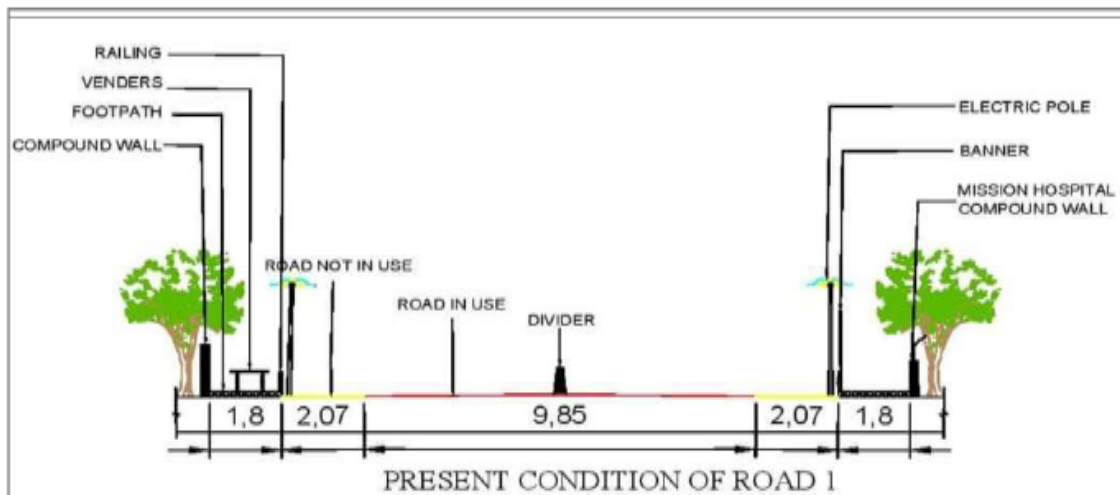


Figure 2: Present condition of road



Figure 3: Traffic congestion at 10 a.m.



Figure 4: Traffic congestion at 2.30 p.m.



Figure 5: Traffic congestion at 3.30 p.m.

PROPOSED SOLUTION

Widening of Road

The first solution clicks in the mind is the possibility of widening the road. Prohibiting unauthorized parking, hawkers, and illegal advertising boards will help maximize road use. To limit the acquisition of road space, control lines must be implemented. See below **figure 6**.

One Way Routes

The city of Miraj has a two-way transportation system, which causes significant traffic congestion. It is possible that implementing a one-way route system for the road leading to Kupwad MIDC from the main road will provide further congestion relief.

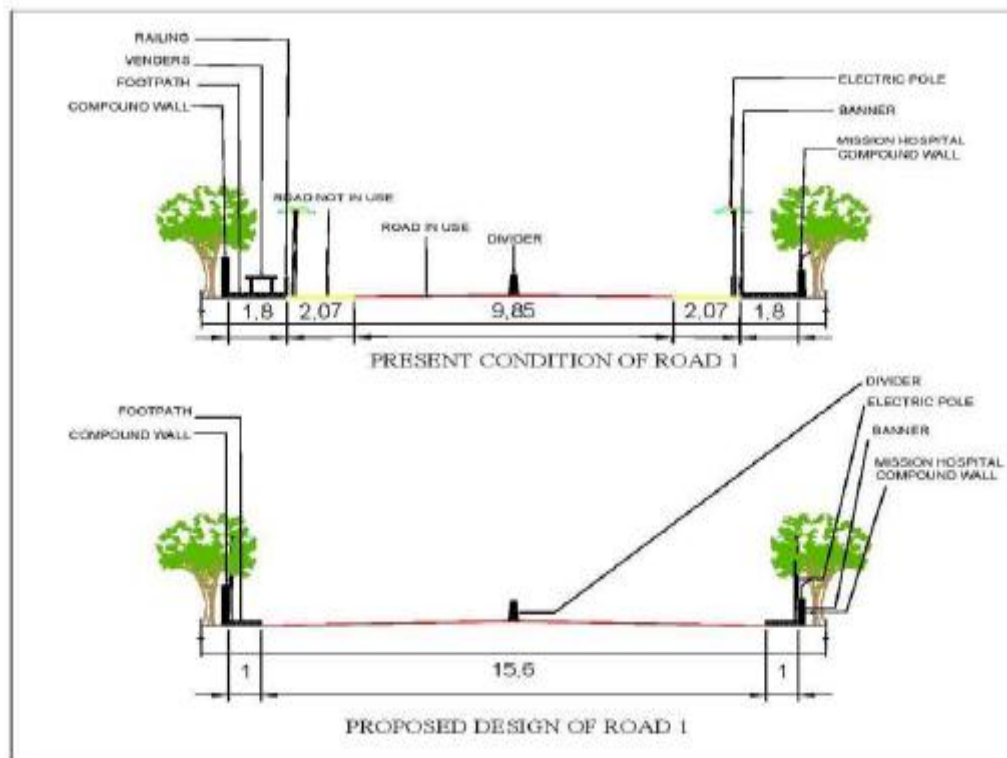


Figure 6: Widening of road

Provision of Signal

Providing traffic signals at Gandhi Chowk for smooth movement of traffic flow

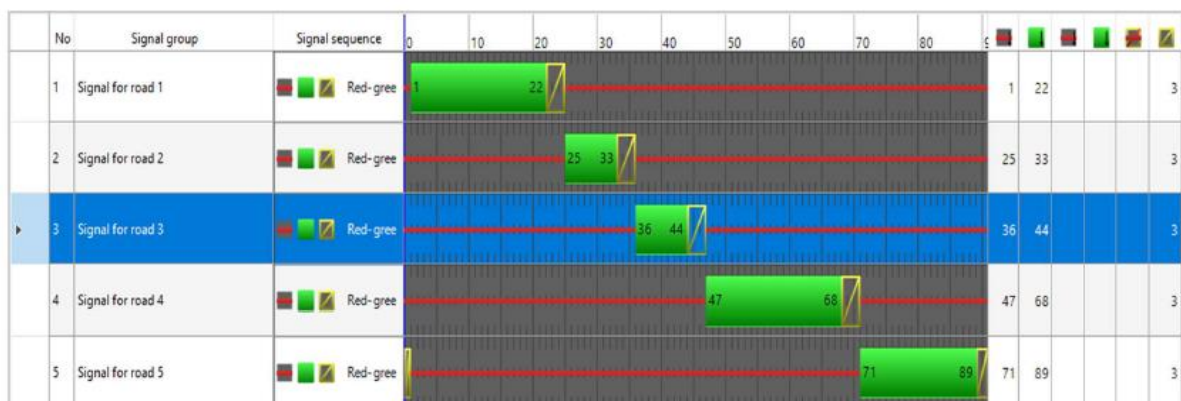


Figure 7: Traffic signal timing

Providing Island

To provide separate lane, we have designed island which may give a greater relief from congestion.

A Well-Designed Parking System

Random parking and parking congestion can be solved by erecting one or two multistory buildings and reserving a vacant lot.

Strict Traffic Law Enforcement

Most traffic jams at Gandhi Chowk can be avoided by strictly enforcing traffic laws. If each and every traffic policeman does his duty then it will be easy to implement rules.

CONCLUSION

This paper concluded that Miraj city has traffic congestion problem at the intersection. Traffic signal and widening of the road is the best solution for decreasing the traffic congestion. The advantage of the paper is that the suggested solutions are easily adoptable with less financial expenditure, less confusing to ordinary citizens, safety from accident, reducing travel time and welfare for city environment.

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